

# Topics of the PhD paper

## Central Theme 1:

Theories and Strategies Concepts of Sustainable Urban and Regional Development

## Proposals for PhD and Research Topics:

- Theory and Methods of Sustainable Urban and Regional Development - Transfer from Theory into Practice
- Integrative Development Planning to Reduce Urban-Rural Disparities
- Goals of Material Metabolism for Sustainable Urban Development
- Practice Mode of Sustainable Urban and Regional Development
- Development of Planning Principles in Analogy of the German Principle of "Equal Living Conditions"
- Assessment Systems for Sustainable Urban and Regional Development
- Construction Examples of Global Sustainable Cities
- Economies of Regional Sustainable Development
- Models and Best Practice Examples of Sustainable Urban and Regional Development in Germany
- Models and Best Practice Examples of Sustainable Urban and Regional Development in Germany and China: Similarities and Differences
- Models and Best Practice Examples of Sustainable Urban and Regional Development in Europe
- Models and Best Practice Examples of Sustainable Urban and Regional Development in Europe and China: Similarities and Differences
- Cross-Border Integrative Concepts of Urban and Regional Development in Europe: by Example of Population and Migration Forecast in Selected Small Border Regions
- Methods for Small-Scale Population- and Migration Forecast
- Development Perspectives of Welfare in Rural Areas with Special Attention to Demographic Trends
- Comparative Study on Environmental Planning for the Need of Urban-Rural Integration - German and Chinese Case Studies
- Sustainable Development of the Ocean and Coastal Area
- Coastal and Ocean Management
- Oceans Policy and Law
- Urban-Rural Integration of Coastal Area of China – Case Study in Yangtze River Delta
- Social Integration of Migrant in Urbanization
- Legal Framework for a Balanced Regional Development: an Comparative Evaluation Germany and China
- Education and Training as a Basis for a Sustainable Urban and Regional Development (Case Studies in Province Sichuan and Province Guangxi)
- Strategies of Regional Knowledge- and Technology Transfer on the Example of Sichuan- and Guangxi Province in China and the Regions of Bremen and Trier in Germany
- Science Parks: Analysis and Evaluation of German and Chinese Best Practice Examples
- Integrated Regional Development as a Starting Point to enhance Regional Cooperation Capacity (Liaoning, Heilongjiang, Inner Mongolia)
- Approaches and Opportunities for Comparison of Models of Cooperation between Municipalities / Regions to Secure the Welfare in Germany and China
- Strategic Alliances at the Municipal and Regional Level: Comparison of Selected German and Chinese Examples
- Financial Adjustment Systems between Rich and Poor Regions in Germany and China
- Legal Basis of Financial Adjustment Systems in Germany and China
- Review of Regional Public Funding Programs in Germany and China in Terms of their Effects on the Reduction of Disparities between Developed and Less Developed Areas
- Transfer of Experience from the Rhine Area Based upon Cross-Border and Interregional Cooperation in the Development of the Yangtze River Area
- High spatial resolution satellite remote sensing for establishing planning documents in urban- rural transition areas
- Satellite time series for analysing environmental dynamics in regional development projects
- Advanced methods in survey statistics for establishing and maintaining regional information system

# Topics of the PhD paper

## Central Theme 2:

Green Intermodal Mobility: Theory, Practical Standards and New Technologies in Personal-, Business- and Freight Transport

## Proposals for PhD and Research Topics:

- Integrated Management Theory and Method of Traffic and Transportation System
- Sustainable Traffic Development Planning and Professional Mobility Management: A Comparison of Selected Examples in Germany and China
- Urban Transportation Planning and Management
- Urban Form and Travel Demand
- Economic Theory and Policy Research of Transportation
- Traffic and Transportation Planning and Management, Urban Traffic Engineering, Intelligent Traffic System and Control, Traffic and Transportation Safety Engineering, Transportation Economics
- Urban Public Traffic Engineering, Theory and Technology of Intelligent Traffic Operation and Dispatch
- Establishing and Expanding Transeurasian Transportation Corridors with Special Attention to the Regional Effect Chains in Rural- and Urban Areas
- Ensuring Mobility and Accessibility in Urban- and Rural Areas: A Sino-German Comparison
- Mobility Centers, E-Mobility, and Carsharing: Application of Models of Urban Areas in Rural Areas
- Development of a Multi-Scale Evaluation Model for Capacity Analysis of Railway Infrastructure
- Railway Operation and Management, Information Technology in Railway Transportation
- Technology and Management for Railway Passenger and Freight Transportation
- Train Control of High-speed Railway
- Rail Traffic Operation Safety Control Engineering
- Road Engineering, Railway and Urban Rail Engineering
- Road Pricing
- Theory and Technology of Route Survey Design
- Theory and Technology of Rail Structure Design
- Dynamic Response Analysis of Train Line
- Planning, Design and Construction of Urban Rail Transportation Project
- Environment Impact of Urban Rail Traffic Vibration and Noise
- Integrated Traffic and Air Pollution Control Planning in Urban- and Rural Areas: Approaches in Germany and China — an Evaluative Comparison
- Low-Carbon Urban Transportation: Energy Consumption; CO2 Emissions
- Transportation and Logistics, Multi-modal Transportation, Planning and Management of Transportation Corridor
- Theory and Method of Transportation Logistics System Planning Logistics a. Supply Chain Management
- Logistics Operation Management
- Container Transportation and Multi-modal Transportation
- Planning and Management of Transportation Corridor
- Model Project: Establishment of Transeurasian Traffic Corridors for Regional Development (Logistic Cluster)
- Promoting Cooperation between the Regions along the Eurasian Transport Corridor
- Regional and Urban Economic Transport Concepts
- Regional Logistics (Mesologistics) and Logistics Parks
- Logistics Parks and Freight Transport Centers: Analysis and Evaluation of German and Chinese Best Practice Examples
- Setting up Hinterland Traffic Network by Promoting Freight Transport Center in Rural Areas
- Special Economic Zones in China and Free Zones in Germany and Europe: Instruments of Regional Structural Policy — A German-Chinese Comparison
- Cooperative Logistics- and Transport Planning
- Business Models in the Logistics Industry for the Construction of Multimodal Transport Chains
- City Logistics, Freight Transport and E-Mobility

# Topics of the PhD paper

## Central Theme 3:

Sustainable Protection of the Environment (particularly Air and Water Quality)

### Proposals for PhD and Research Topics (Option)

- Environment Development Planning
- Ecological Risk Assessment and Ecosystem Protection in Regional Development
- Analysis and Economic Valuation of Ecosystem Services and Functions as Basis for Developing Sustainable Concepts for Using Resources
- Urban Ecosystem and Sustainable Planning and Modeling
- Urban Environment and Risk and Governance of Ecological Health
- Urban Heat Island Effects and Urban Vegetation
- Urban Ecological Planning
- Ecological Conservation Benefits of Urban Vegetation
- Framework for Securing Air Quality in Dense Urban Agglomerations: Adaptation Strategies for Coping with Climate Change Impact in Urban and Rural Areas
- Methods for Vulnerability Analysis
- Toolbox Adaptation Strategies
- Concept Development for Maintaining Fresh Air Channels in Densely Built Urban Areas
- Economic Valuation of Adaptation Measures
- Vulnerability, Resilience and Critical Infrastructures
- Responses of Vulnerable Ecosystems to Global Change
- Impacts of Land Use to Watershed Ecosystem
- Relations between Habitat Diversity and Biological Diversity in Riparian Ecosystems
- Assessment of River Health
- Responses of Forest Growth to Global Change Impacts
- Phosphorous Recycling from Sewage Sludge as a Developing Factor for Rural Regions
- Advanced Methods in Survey Statistics for Establishing and Maintaining Regional Information Systems
- Satellite Observations for Analysing and Monitoring Environmental Dynamics in Regional Development Projects
- Geoinformatics for Establishing and Using of Efficient Municipal and Regional Environmental Information Systems
- Concepts and Methods of Regional and Environmental Statistics, Environmental Remote Sensing and Geoinformatics
- Environmental Economics and Informatics in Regional Development Concepts
- Environmental Law – a Comparison of German and Chinese Paradigms and Approaches
- The role of grazing for ecosystem functioning and ecosystem services in Euphrate poplar (*Populus euphratica*) woodland along the Tarim River, NW China.
- Do stand structure and water regime affect understory biodiversity in Euphrate poplar (*Populus euphratica*) woodland?
- The role of grazing and nutrient availability for ecosystem functioning and ecosystem services of rangeland in the foreland of river oases in NW China. (Could be subdivided into two theses)
- Integrating agricultural production models and satellite observations for estimating the water requirements of land reclamation projects.
- In vitro models for hazard assessment of polar environmental chemicals
- Combination of a multi-cellular approach and an aerosol chamber for monitoring urban air pollution
- Development of a miniaturized assay for high-throughput screening of environmental chemicals and their photooxidized derivatives
- Novel approaches for risk assessment of environmental nanoparticles

## Topics of the PhD paper

### Central Theme 4:

Future Regional Management: Goal-Oriented Management, Strategies and Methods

### Proposals for PhD and Research Topics:

- Sustainable City and Urban Management in Germany and in China: Evaluations and Recommendations
- Defining Measurable Objectives for Urban and Regional Development
- Models and Methods for Forecasting Future Trends and the Assessment of Opportunities and Risks
- Urban Political Management: A Comparison of Selected Examples in Germany and China
- Management by Objectives: Strategic Objectives and Action Plans and Their Actual Implementation by the Example of Selected German and Chinese Regions
- Successful Models of Implementation of Strategic Objective- and Action Plans in Germany and Europe and Their Applicability to China
- Successful Models of Implementation of Strategic Objective- and Action Plans in China and Their Applicability to Germany / Europe
- Project Development and Implementation as the Foundation of a Successful Sustainable Urban- and Regional Development: Project Management in Germany and China
- Sustainable Urban Development and Assessment
- Development of Sustainable Regional Development Strategies with Appropriate Management Tools
- Concepts for Regional Management and Regional Marketing
- Land Use Planning and Implementation of Strategies for Sustainable Land Management in Central and Peripheral Regions
- Land Use and Sustainable Management
- Land Use and Decentralized Integrative Water Management
- Model project: Sustainable Land Use and Water Management – by Example of Guangdong Province (for the Dongjiang Delta)
- Land Use Planning and Fluvial Ecosystem Protection in Rapid Urbanization Watershed
- Management of Urban LUCC and its Environment (Disaster) Effects
- Sustainable Urban Development and Education
- Training and Education of Urban- and Regional Managers
- Urban and Regional Manager: A New Profession

## Topics of the PhD paper

### Central Theme 5:

Information Networks, Mobile Communication, Electrical Engineering

### Proposals for PhD and Research Topics:

- Spatial Adaptation and Transfer Mechanisms of Technological Developments
- The Importance of Higher Education Institutions to Transfer Technology to Businesses and Enterprises in Rural Areas: A German-Chinese Comparison
- Communication Networks as Basic Infrastructure for the Promotion of Rural Regions Development in Germany and China
- Incubators and Technology Parks in Germany and China: Similarities and Differences
- Engineering Theory and Science in Information Networks
- Theory and Technology of Mobile Internet
- Theory and Application of Communication Networks Technology
- Theory and Key Technology of Network Contents Safety
- Theory and Key Technology of Sensor Networks
- Sensing and Control Technology
- Technology of Intelligent and Micro Electronic Networks
- System Integration of Power Conversion Circuit
- Risk Management/Prevention and Loss Assessment of (Agricultural) Natural Disaster
- Foresighted Disaster Control and Disaster Prevention
- Model project: Disaster Control and Prevention – Foresighted Risk Management by the Example of the City of Lijiang in Yunnan Province
- Wireless Mobile Communication and Wideband Mobile Communication of High-speed Railway
- Railway Power and Electrical Traction
- Urban Security: coping insecurity
- Urban Security: Handling Complexity
- The effects of PPP on disaster & emergency governance
- Smart City: Cultural change & acceptance
- Crisis communication: the role of mobile, mesh and ad-hoc networks
- Spontaneous networking as infrastructure replacement
- Early Warning Systems: How to reach the population
- Crisis communication: the role of heterogeneous networks (hierarchical/governmental to peer-to-peer social networks)
- Wireless Sensor Networks for Early Warning Systems
- Control and Pursuit of Air Traffic over the Seas
- Intermodal Tracking
- Cross-boarder Dangerous Goods transport: Delivery Tracking and Guarantees
- Cargo Area Stock Market and Float Management: Demands and Options on Technology of Telecommunication and their Operation